

**HIGH SPEED METHOD FOR MAINTAINING A SUMMARY OF THREAD  
ACTIVITY FOR MULTIPROCESSOR COMPUTER SYSTEMS**

**ABSTRACT OF THE DISCLOSURE**

5           A high-speed method for maintaining a summary of thread activity reduces  
the number of remote-memory operations for an  $n$  processor, multiple node  
computer system from  $n^2$  to  $(2n-1)$  operations. The method uses a hierarchical  
summary-of-thread-activity data structure that includes structures such as first and  
second level bit masks. The first level bit mask is accessible to all nodes and  
10 contains a bit per node, the bit indicating whether the corresponding node contains  
a processor that has not yet passed through a quiescent state. The second level bit  
mask is local to each node and contains a bit per processor per node, the bit  
indicating whether the corresponding processor has not yet passed through a  
quiescent state. The method includes determining from a data structure on the  
15 processor's node (such as a second level bitmask) if the processor has passed  
through a quiescent state. If so, it is then determined from the data structure if all  
other processors on its node have passed through a quiescent state. If so, it is then  
indicated in a data structure accessible to all nodes (such as the first level bitmask)  
that all processors on the processor's node have passed through a quiescent state.  
20 The local generation number can also be stored in the data structure accessible to  
all nodes. If a processor determines from this data structure that the processor is  
the last processor to pass through a quiescent state, the processor updates the data  
structure for storing a number of the current generation stored in the memory of  
each node.

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